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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,968	11/10/2003	Chin-Lung Lin	NAUP0543USA	2967

27765 7590 08/10/2006

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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/605,968	Applicant(s) LIN ET AL.	
	Examiner Daborah Chacko-Davis	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 4, 7-20, are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 6,388,736 (Smith et al., hereinafter referred to as Smith).

Smith, in col 3, lines 54-67, in col 4, lines 1-20, and lines 53-67, in col 6, lines 35-67, in col 7, lines 1-24, in col 8, lines 5-27, in col 9, lines 42-56, in col 10, lines 38-41, in col 12, lines 19-26, discloses an imaging method (lithographic process) of forming a resist pattern (relief pattern) on a substrate using a phase shifting mask, wherein the mask includes a plurality of first and second phase shifting transparent regions surrounding a feature in a continuous manner (spacing between patterns are small), opaque regions (0% transmission regions, adjacent and/or not adjacent the feature patterns, random features of 0% and 100% transmission of varying thicknesses), and the phase shift transparent regions are placed close to each other allowing phase shifting of 0° and 180° relative to each other (phase shift regions and the pattern feature), illuminating the mask to form the corresponding patterns on the substrate. Smith, in col 4, lines 1-20, discloses that the boundaries of the phase shift features are placed very close each other such that the destructive image intensities does not resolve but produce a dark region i.e., the at least one end is positioned at an

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edge portion of the main feature (claims 1, 8-9, 10-12, 13, 17-20). Smith, in col 10, lines 66-67, in col 11, lines 1-5, discloses a silicon dioxide substrate (claims 2, and 14).

Smith, in col 1, lines 13-28, discloses that the pattern formed is a circuit pattern (claims 4, and 15). Smith, in col 6, lines 41-45, discloses that the phase shifting mask is a chromeless phase shifting mask (claims 7, and 16).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 5-6, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,388,736 (Smith et al., hereinafter referred to as Smith) in view of U. S. Patent Application Publication No. 2004/0013948 (Lin et al., herein after referred to as Lin).

Smith in col, 1, lines 13-24, and in col 3, lines 65-67, discloses an imaging method of forming circuit patterns (includes metal lines patterns) on a photosensitive material coated substrate (claim 6).

The difference between the claims and Smith is that Smith does not disclose that the photosensitive layer is a positive photoresist layer (claim 3). Smith does not disclose that the photosensitive layer is a negative photoresist layer (claim 5).

Lin, in [0002], and [0024], discloses a photolithographical method of performing exposure on a positive or a negative photoresist (photosensitive material) coated wafer so as to transfer equal or complementary patterns of the mask to the photosensitive material (claims 3, and 5).

Therefore, it would be obvious to a skilled artisan to modify Smith by employing a positive or a negative photoresist material as the photosensitive material as suggested by Lin because Smith, in col 10, lines 66-67, in col 11, lines 1-5, discloses that the illumination process can be performed on a photosensitive material or resist material via a mask pattern, wherein the resist material enables pattern delineation and creation of masking apertures.

Response to Arguments

5. Applicant's arguments filed June 1, 2006, have been fully considered but they are not persuasive. The 102 and 103 rejections made in the previous office action are maintained.

A) Applicants argue that Smith et al., does not teach that the boundaries between the first phase shift transparent region and the second phase shift transparent regions each comprising an end located at the edge of the transparent main feature.

Smith, in col 4, lines 5-20, that the transparent phase shift features are formed in the mask and are positioned so close together (i.e., the ends touch the main feature) that destructive image intensities are not resolved for each of the phase shift features.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

August 7, 2006.



JOHN A. MCPHERSON
PRIMARY EXAMINER